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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/687,238	10/13/2000	Ayman F. Naguib	Naguib 2000-0238	1168
7590		02/18/2005	EXAMINER	
Henry T. Brendzel		CORRIELUS, JEAN B		
P.O. Box 574		ART UNIT		
Springfield, NJ 07081		PAPER NUMBER		
		2637		

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/687,238	Applicant(s) NAGUIB ET AL.	
	Examiner Jean B Corielus	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 2 is/are allowed.
- 6) ☒ Claim(s) 3-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 3 and 4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 3 recites "and to multi-transmitting antennas **encoding schema**". However, the specification, as filed does not provide support for such limitations as claimed. The specification only teaches, at best, at page 8, line 16-18 that the equalizer is responsive to "estimate of the transmission channel parameters" and further at page 4 lines 17-18, teaches that the received signal is expressed in term of signal plus noise, where the signal includes code symbol transmitted from antenna i at time K. Claim 4 is likewise rejected because of its dependency to rejected claim 3.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Struhsaker US patent No. 5,923,651 in view of Forssen et al US Patent No. 5,566,209.

Struhsaker discloses a receiver comprising an equalizer 78 responsive to signals from antenna 54 a mapper responsive to said equalizer 78 a decoder 84 responsive to said mapper 82. However, Struhsaker does not teach that the receiver is coupled to a plurality of antennas. It also fails to specifically teach said equalizer 78 is responsive to transmission parameter value estimates of said transmission channel and to multi-transmitting antennas encoding schema (data). In the same field of endeavor, Forssen et al teaches an equalizer 24 see col. 5, lines 36-40, responsive to signals from a plurality of antenna 12 and it further teaches that the equalizer 24 is further responsive to both transmission parameter value estimates generated by means 20 and to multi-transmitting antennas (58) encoding schema (data) see fig. 3. It would have been obvious to one skill in the art to incorporate such a teaching in Struhsaker in order to overcome the complexity and intersymbol interference problems found in the prior art so as to improve signal detection see col. 2, lines 25-29.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Struhsaker US Patent No. 5,923,651 in view of Forssen et al US Patent No. 5,566,209 and further in view of Huang US Patent No. 5,475,716.

As applied to claim 3 above, Struhsaker further teaches an outer encoder 32 for applying the information signals a mapper 34 for mapping the result of the outer decoder. However, Struhsaker and Forssen et al it fail to teach the used of a trellis coder for receiving the result of said mapping. However, the used of trellis encoder in the transmitter is old and well established in the art. For instance, Huang teaches the used of a trellis encoder in the transmitter section. It would have been obvious to one skill in the art at the time of the invention to incorporate such a teaching in Struhsaker and Forssen et al in order to enhance the coding efficiency of the apparatus. Huang teaches only trellis encoding prior to mapping and does not teach the reverse. Note that whether the signal is trellis encoded prior to mapping or mapping prior to trellis encoded, the end result and system requirements will still be the same. Hence such modification would have been in the purview of one of ordinary skilled in the art.

Allowable Subject Matter

6. Claims 1-2 are allowed.

Response to Arguments

7. Applicant's arguments filed 6/28/04 have been fully considered but they are not persuasive. It is alleged that the specification, more specifically equation (3) provides support for the claimed limitation of "multi transmitting antennas **encoding schema**" however, it is noted that the portion of the specification, referred to, defining the different parameters of the equation, only recites that the received signal includes code symbol (signal) transmitted from the antenna. There is no reference anywhere in the specification to " to multi transmitting antennas **encoding schema** ". It appears that applicant intends to recite " encoded data received from the multi-transmitting antenna, wherein the received encoded data is provided to the plurality of antenna as the received signals". Should such interpretation be acceptable to the applicant, it is suggested that the claim be amended to incorporate such a limitation.

Conclusion

8. Applicant's amendment (**See communication filed on 12/22/03**) necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

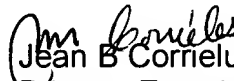
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Maxi-Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-3086. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jean B Corrielus
Primary Examiner
Art Unit 2637
2/17/05